

REFERENCE CARD

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The present invention concerns a reference card to be used as a reference object concerning the light reflection and colour balance in photography, especially a grey card, which has neutral grey colour and reflects a predetermined amount of light.

Grey cards are used in photography for taking light measurement and exposure setting of the camera, and in after treatment of the picture, the grey card can be used as a reference when producing a picture with the right colour balance. Briefly the method comprises the steps to measure the reflecting incoming light on the grey card by means of a light meter, the grey card normally reflecting 18 % of the incoming light, and to adjust the exposure setting of the camera according to the measured value. Thereafter, the object is photographed with the settings of the camera appropriate for the occasion, whereby the photo is stored on a film or in an electronic memory according the used camera technique. When producing the picture it is known that the grey card is properly exposed, whereby this information gives data for copying or for digital production of the whole picture.

Previously known grey cards are made of rigid carton with a neutral grey side, which reflects 18 % of the incoming light and a white side, which reflects substantially 90 % of the incoming light and are sold in one smaller and one bigger size, about 130 cm<sup>2</sup> and 520 cm<sup>2</sup>, respectively, at a relatively high price. The grey cards are sensitive to light and gradually change colour. After some time the colour value has changed too much so the grey colour is not neutral any longer and the grey card cannot be used for the balancing of grey and colours any longer.

Another problem is that the grey cards are large and ungainly to transport together with the camera equipment and

occupy a large area of the photo so that a large portion of the original photo must be cut away. Additionally, they are difficult to place at the object to be photographed. Mostly large clips are required or you have to try to lean the grey  
5 card against something, at the same time it is not allowed to be in an angle towards the wrong direction.

The aim of the present invention is to set aside the above mentioned problems.

This aim is fulfilled by means of a reference card  
10 according to the preamble which is characterized in that the back of the reference card is provided with a releasable adhesive and a number of reference cards are assembled in a pad, on a sheet or attached to a strip, which is stored in a rolled-up position so that the reference cards are protected  
15 from light by each other.

The advantage with this reference card is that it is easy to bring, easy to attach where it is preferably positioned and also easy to remove and reattach at another position and reuse it as long as the colour stays unchanged. Since the reference  
20 cards are attached one upon the other as in a pad, attached to sheets or attached to a strip, which is stored in a rolled-up position they protect each other from having a change in colour due to exposure of light. Only the top one in the pad will be exposed to light. The sheets are preferably stored  
25 with the reference card sides opposing each other or folded so the reference cards thereof are protected from light.

According to one embodiment, the reference card is flexible, which has the advantage that the reference card may be folded and, for example, attached in an inclined position  
30 from the surface.

According to another embodiment the front of the reference card is provided with a field, which facilitates the setting of the focus when photographing objects without sharp contours and which additionally, when photographing using

multishot technique (for example three shot technique where one red, one blue and one green picture is assembled on top of each other) may be used for centering of the taken pictures (three in case of three shot technique, four in case of four shot technique) so that they exactly coincide.

According to a further embodiment, the reference card is provided with a grey scale, which has the same neutral grey colour as its basis as the rest of the reference card but is mixed with white and black, respectively, and which extends from white, 0 % black mixed in, to black, 100 % black mixed in, via a number of grey fields with varying mixes of white and black, respectively. The grey scale is, for example, used as a reference for the contrast and to set the white- and blackpoint of the motif.

According to another embodiment, the reference card is provided with a colour scale with reference colours.

Preferably the pad, the sheets or the roll of reference cards are stored in a light tight box and the size of the reference card is smaller than 300 cm<sup>2</sup> preferably smaller than 130 cm<sup>2</sup> and most preferably smaller than 70 cm<sup>2</sup>. Also very small reference cards may be made with an area surface of about 1-3 cm<sup>2</sup>. Such card may advantageously be provided with a white and a black field to give the possibility to set the white and black point of the motif.

Preferred embodiments will now be described in more detail in connection with the drawings, in which:

Fig. 1 shows a pad of reference cards according to the present invention.

Fig. 2 shows an enlarged reference card according to the preferred embodiment of the present invention.

Fig. 3 shows a roll of reference cards according to the present invention.

Fig. 4 shows a number of sheets with a number of attached

reference cards according to the present invention.

The reference cards 10 according to the invention are provided with a releasable adhesive on the back. The adhesive  
5 may cover the whole of the back or portions thereof, for example, as a strip along one of the edges. Thanks to the adhesive the reference card 10 may be provided in a pad 1 where the reference cards placed on top protects the reference cards 10 placed underneath from exposure of light, since light  
10 gradually makes the reference cards more and more yellow, i.e. the neutral grey colour changes into a grey colour where yellow dominates. See fig. 1. Another possibility is to attach preferably small reference cards 10 to a strip 7, which is rolled-up into a roll where the reference cards 10 are  
15 preferably provided on the inside of the strip 7 to be protected from light by each other and the strip 7. See fig. 3. A further possibility is to attach a number of reference cards to a sheet 8, which, for example may be stored as loose sheets or in a pad, see fig. 4.

20 The reference card, according to a preferred embodiment, is flexible so it is bendable or foldable, whereby the adhesive attach to the surface and the folded-out portion faces the camera in an appropriate angle, and therefore are easier to attach and position in an appropriate place. It may  
25 be torn apart so that a smaller portion is used in close-up photography or made in very small sizes.

The reference card must be light-tight and may not let light through, for example, from behind. Preferably the back is black.

30 When photographing, for example, large paintings it may be difficult to set focus, wherefore preferably a white field 2 with a black grid 3 is provided at the front of the reference card, see fig. 2. Also a black field 4 with white lines 5, which, for example, forms a target may be provided.

Of course may such fields have any design, the main thing is that it is contrasty.

Such fields 2, 4 are a great help when taking digital photos and then especially when taking digital photos using multishot technique. This technique comprises the steps of taking a photo of the object a number of times, for example using three shot technique three times, with the same settings but with different colour filters, using three shot technique red, blue and green and then assemble these photos into the one and same photo. The camera is very sensitive so the slightest movement of the floor causes easily a displacement of any of the photos. To be able to see if a displacement has occurred and thereafter centre the photos, i.e. pixle adjust the photos, a very contrasty field in the photo with thin lines, which seldom naturally exists on the object being photographed, is required. To have at least one field like this on the reference card facilitates the work enormously.

Preferably also a grey scale 6 provided at the front of the reference card, which grey scale is based on the same neutral grey colour as the rest of the reference card. The grey scale extends from white to black via a number of fields with different mixes of white and black, respectively. In the preferred embodiment a grey scale is illustrated which show the percentage of black mix. The white field has 0 % of black mixed in, the next field has 5 % of black and in this way the scale steps up with 5 % per field until 100 % black is reached. Of course other than shown sizes of the percentage steps may be used or the numbers may show the percentage of mix in of white or the numbers may be missed out. The grey scale helps determining of the contrast and at which percentage the picture shall be produced. This is important for obtaining the best results in typing and printing of pictures. Of course, a colour field may also be provided on the front of the reference card if wished (not shown) so that

a reference may be achieved for each colour, red, blue, green, cyanogen, magenta and yellow.

Advantageously the inventive reference card may be used when scanning reflective images to be able to determine the grey balance.

One of the advantages of the reference card according to the present invention is the convenient size. Fig. 2 show the reference card in its biggest size, about 300 cm<sup>2</sup>, but preferably they are not larger than about 130 cm<sup>2</sup> and rather not larger than about 70 cm<sup>2</sup>. The reference cards may also be made in very small sizes, preferably between 1-3 cm<sup>2</sup> and preferably without the previously mentioned fields. However they may advantageously be provided with a black and a white field for the determination of the blackpoint and the whitepoint, respectively. These small reference cards may be of great use in general photography since such a small field not always need to be cut away from the picture but gives one or more reference points. Thanks to the adhesive on the back they are easily positioned at desired place. The pad 1, the strip 7 or the sheets 8 with reference cards is preferably stored in a light-tight box (not shown). In its smallest size the box of reference cards may easily be carried in a pocket without the risk of being creased or damaged.

Since the reference cards, just as film, is a "fresh article" decaying with time and light sensitive they may be marked with a date and even marked with a serial number or emulsion number so that their exact values may be attained from the producer.

With this preferred embodiment a convenient reference card, which is easy to work with, last for a long time and additionally has a lot help and special functions, is provided.

The reference card according to the invention may be manufactured of a carrier means of paper, carton or of a

suitable plastic material and the colour in question may be applied by means of opaquely covering by spraying or painting. This method is preferred instead of a printing method, which may bring up problems at the actual printing in achieving a  
5 fully covering colour layer, the right tint as well as a reference card with full quality and resistance.